

WHAT IS CLAIMED IS:

1 1. An actuation assembly comprising:
 2 a mechanical member comprising an alloy, (said alloy member to undergo
 3 an internal change in structure thereby producing a force set) within the mechanical
 4 member; and
 5 a pivot member moved by said force, said mechanical member applying
 6 said force to said pivot member.

1 2. The actuation assembly of claim 1, wherein the alloy member is
 2 made of a shape-memory alloy taken from a group of alloys comprising of the products
 3 Nitinol™ and Flexinol™.

1 3. A hard disk drive comprising an actuation assembly and a housing
 2 having a receptacle which removably receives a cartridge, a cover formed of a cover
 3 material and a front loading panel disposed over the receptacle, the actuation assembly
 4 comprising:
 5 a hinge assembly; and
 6 a drive assembly comprising an alloy member which is coupled to the
 7 hinge assembly; and
 8 a power supply which generates an electrical current, the current used to
 9 sufficiently raise the temperature of the alloy member (causing the alloy member to
 10 (undergo an internal change in structure) thereby producing a force set) within the alloy
 11 member, the force being sufficient to actuate movement of the hinge assembly)

1 4. The actuation assembly of claim 3, the hinge assembly comprising:
 2 a first mechanical arm coupled to a pivot rod; and
 3 a second mechanical arm coupled to the pivot rod, wherein the contraction
 4 force causes rotation of the pivot rod which causes the arms to rotate, the pivot rod
 5 defining the axis of rotation.

1 5. The actuation assembly of claim 3, the hinge assembly
 2 comprising: a single hinge coupled to the loading panel.

1 6. The actuation assembly of claim 3, wherein the drive assembly
2 further comprises:

3 a cam assembly comprising:

4 a cam rotatable between an initial position and first and second
5 extended positions;

6 a cam spring in slidable contact with a portion of the cam member
7 surface, whereby the cam spring engages the portion of the cam member surface
8 to locate the cam member in each of said positions; and

9 a biasing member coupled to the cam member to return the alloy
10 member to the initial position following the removal of the alloy member force.

1 7. The actuation assembly of claim 3, the drive assembly further
2 comprising:

3 a lever, having a first end and a second end, rotatable about a pivot
4 location between a first position and a second position, the first end coupled to the alloy
5 member and the second end coupled to a biasing spring, the biasing spring to return the
6 alloy member to an initial position following the removal of the alloy member force.

1 8. The actuation assembly of claim 3, the drive assembly further
2 comprising a cable having a first end coupled to the alloy member.

1 9. The actuation assembly of claim 3, wherein the power supply is
2 activated or deactivated by a switching mechanism.

1 10. The actuation assembly of claim 9, wherein deactivation of the
2 current causes the internal structure of the alloy member to return to its initial state
3 thereby removing the alloy member force.

1 11. The actuation assembly of claim 3, wherein the alloy member is
2 made of a shape-memory alloy taken from a group of alloys comprising of the products
3 Nitinol™ and Flexinol™.

1 12. The actuation assembly of claim 3, wherein the alloy member is
2 disposed within a protective shield.

1 13. The actuation assembly of claim 3 further comprising a pair of
2 hinge assemblies coupled to said loading panel.

1 14. A method for manipulating members of a removable hard disk
2 drive, the removable hard disk drive comprising a housing having a receptacle which
3 removably receives a cartridge, a cover formed of a cover material and a front loading
4 panel disposed over the receptacle, the method comprising:

5 selecting an alloy member which (undergoes an (internal change in structure)
6 when subjected to a change in temperature;

7 generating an electrical current, the current used to sufficiently raise the
8 temperature of the alloy member to produce a force set within the alloy member; and

9 moving a component of the drive using the alloy member force.

1 15. The method of claim 14, wherein the alloy member comprises a
2 shape-memory alloy taken from the group comprising of Nitinol™ and Flexinol™.

1 16. A method comprising:

2 supplying energy to an alloy member causing the alloy member to undergo
3 an internal change in structure thereby producing a force set within the alloy member; and
4 actuating movement of a device by coupling said force to said device.

1 17. The method of claim 16, wherein the alloy member comprises a
2 shape-memory alloy taken from the group comprising of Nitinol™ and Flexinol™.

1 18. A method for fabricating an actuation assembly for a hard disk
2 drive comprising a housing having a receptacle which removably receives a cartridge, a
3 cover formed of a cover material and a front loading panel disposed over the receptacle,
4 the method comprising:

5 selecting an alloy member, having a first end and a second end, which can
6 undergo an (internal change in structure) which produces a force within the alloy member;

7 affixing said first end of the alloy member to a pivot assembly; and

8 affixing said second end of the alloy member to a hinge mechanism, the
9 hinge mechanism being coupled to a loading panel.

1 19. A method as in claim 18, wherein the pivot assembly comprises:
2 positions;
3 a cam spring in slidable contact with a portion of the cam member surface,
4 whereby the cam spring engages the portion of the cam member surface to locate the cam
5 member in each of said positions; and
6 a biasing member coupled to the cam member to return the alloy
7 member to the initial position following the removal of the alloy member force.

1 20. A disk drive system for use with a removable disk cartridge, the
2 disk drive system comprising a housing having a receptacle which removably receives the
3 cartridge, the housing having a cover formed of a cover material and a door, the door
4 being coupled to an actuation assembly comprising:
5 a first arm coupled at a first end to the proximal end of a pivot shaft and
6 coupled at a second end to the door;
7 a second arm coupled at a first end to the distal end of a pivot shaft and
8 coupled at a second end to a biasing mechanism;
9 a shape-memory alloy wire mechanically coupled to the second end of the
10 second arm and a position on the housing;
11 a power supply activated by a switch positioned on the housing, wherein
12 the power supply generates a current; and
13 an electrical connection for applying the current to the wire, wherein the
14 wire is heated by the current which causes the wire to contract generating a pulling force
15 which is adapted to actuate the first and second arms.

1 21. The actuation assembly of claim 20, wherein the alloy material
2 comprises a shape-memory alloy taken from the group of alloys comprising of Nitinol™
3 and Flexinol™.